Mecklenburg County
Code Enforcement Department

Task Force on Regulations in Residential Construction

Final Report to the Building-Development Commission

May 15, 2001

Report Index

Part I
Executive Summary

This report concludes the work of the Task Force on Regulations in Residential Construction. The Task Force was assembled in Summer 2000, at the request of the Building–Development Commission (BDC). As outlined by the BDC and the Department, the challenge to the Task Force was four-fold.

- Identify in detail regulations presenting roadblocks to affordable housing, and propose changes.
- Build on the Live-Work Unit criteria and identify all regulations impeding Traditional Neighborhood Design (TND). Propose changes.
- Extend the analysis into review of subdivision and zoning ordinance issues.
- Identify any other initiatives of value to either TND's or affordable housing.

The Task Force began its work on July 31, 2000. Over the next 9 ½ months, the Task Force held 21 regular or subcommittee meetings. Attendance was heavy in the initial four meetings (averaging 12+/meeting), as members identified the full range of issues and organized them into three categories: State Building Code, local ordinances, and local other. Overall, as the Task Force reviewed each topic or issue, attendance averaged eight persons per meeting. Discussions of each topic were candid and open.

The Task Force work and findings are organized into two large categories; State Building Code issues and local issues. This report mirrors that organization. Key recommendations are reviewed in greater detail in the following sections, and include the following:

1. Changes to the NC State Building Code

1.1 Waive rated exterior opening requirements if building is sprinkled.
1.2 Align selected accessibility requirements with the Fair Housing Act.
1.3 Formalize the proposed Live-Work unit criteria.

The Task Force recommends all of the above changes for submittal through the International Code Council code change process.

2. Changes on a local basis

2.1 Standardize alley widths and own publicly.
2.2 Seek State classification of alleys as streets.
2.3 Adopt local cost benefit analysis procedures.
2.4 Make publicly held land available at favorable rates.
2.5 Require fire equipment circulation plans.

The Task Force recommends the City of Charlotte and Towns move to address the above changes at the earliest opportunity.

In studying possible changes to the North Carolina State Building Code, local Architects requested a thorough review of alternate rehab codes, specifically the New Jersey and Maryland Rehab Codes. The Department conducted this review and found significant merit in these codes. In December 2000, we subsequently proposed a North Carolina Rehab Code pilot program to the Building Code Council (BCC) (see Appendix for formal request). While this proposal was denied by the BCC, a similar legislative initiative is working its way through the current session of the North Carolina General Assembly.

In concluding its work, the Task Force highlighted the necessity to advise the Charlotte-Mecklenburg Community of this effort. It is imperative that the five local Affordable Housing Task Force groups, as well as the City of Charlotte and the six Towns be made aware of this report, the work involved and the findings contained herein. To that end, the Task Force requests the Building-Development Commission aggressively publicize these findings and promote these recommendations.

May 15, 2001

Part II:
N.C. State Building Code - Analysis & Recommendations

In initial meetings, the Task Force identified 39 possible changes to the North Carolina State Building Codes, in their entirety. These possible changes were organized into related groups and a review schedule was adopted, wherein Task Force members could participate in discussion of selected topics of interest. Over 9 subcommittee meetings taking 19 weeks, the subcommittee reviewed all 39 possible changes, recommending that three of these advance through the International Code Council (ICC) code change process. The three recommended changes are as follows:

- **Exterior Rated Wall Openings**: Allow the opening rating requirement to be waived if building is fully sprinkled and sprinklers are provided at the openings in question.
- **Accessibility Requirements on Four Units**: Align North Carolina Volume 1-C requirements with the Fair Housing Act, that is apply requirements to buildings with four (4) or more units.
- **Live - Work Unit Criteria**: The Task Force recommends advancing to the ICC, the Live-Work Unit criteria, developed in Mecklenburg County in November, 1999, as revised by the Task Force. A copy of the draft criteria is included in the Appendix.

It merits noting stair tread and riser dimensions are among the topics discussed in great detail, but not recommended for a code change. A detailed review of this discussion and the related logic is included in the Appendix.

A summary of all proposed changes discussed follows including the topic, the relevant code section and the current status or recommendation by the subcommittee. The department plans to advance the three proposed changes to the ICC this summer.

Meeting #	Issue	AH or TND	Category	Code Section	Current Status
1.1	Fire rating of ground floor when residential is above. (Demetri Baches)	TND	Fire Separation	Volume I, Section 303, pg. 33 Volume I, Section 704.1, pg. 151 Volume I, Section 704.3, pg. 156 Volume VII, Section 309.2, pg. 19	The owner currently has two options: 1) if the resident is the same as the work space tenant, there is no separation, 2) if the resident is different, then the separation must be maintained.
1.2	Difference in definition between "live-work" or "lite commercial" and "shop-house"; heavy commercial use on ground floor. (Demetri Baches)	TND	Fire Separation	Draft Position	Most business mercantile uses can mix with residential using one-hour separation. Examples of uses precluded are woodshops, welding, paint booths, automotive, dry cleaning plants because those have higher hazard levels.
1.3	Townhouses require a 2-hour fire rated wall; but condos require a 1-hour firewall; doesn't make sense. (Ben Aycock)	TND	Fire Separation	Volume I, Section 704.4, pg. 156 Volume VII, Section 302.2, pg. 9	After exhaustive discussion, agreed to leave this as is. Reducing rating to one hour with no other considerations would lower safety below apartments and condominiums (ignoring allowed, unlimited area, etc.). One easy way to solve this is to build the townhouses as condominiums and eliminate the individual townhouse property lines.
1.4	When there is separate tenancy in a connected unit like a live-work unit, the building must be built to commercial code. This is in contrast to the standard used when the same unit occupies both the living and working portions of the unit. (Ann Hammond)	TND	Fire Separation	Volume I, Section 303, pg. 33 Volume I, Section 704.1, pg. 151 Volume I, Section 704.3, pg. 156	The owner currently two options: 1) if the resident is the same as the work space tenant, there is no separation, 2) if the resident is different, then the separation must be maintained.
1.5	Infill – protection of opening reference separation between buildings. (John Burgess)	TND	Fire Separation	Volume I, Table 600, pg. 143 Volume I, Section 705.1.1, pg. 157	See Item 2.2.
2.1	Eliminate front and rear parapets instead of repairing them, if required (Tom Goodwin Appendix Item)	AH	Fire Separation	Volume I, Section 704.5.2, pg. 157 (call Tom)	We don't see a problem, need a specific case.
2.2	Use sprinklers to reduce fire rating of protective openings in a rated wall assembly (Tom Goodwin Appendix Item)	AH	Fire Separation	Volume I, Table 600, pg. 143 Volume I, Section 705.1.1, pg. 157	The task force recommends a code change allowing a trade off: if you have sprinklers throughout, then there would not be a requirement for opening protection if the heads are at the opening.
2.3	Have a relationship between the percent of openings and the separation required, or the separation distance should be applied with an acceptable tolerance. (Michael O'Brien)	TND	Fire Separation	Volume I, Table 600, pg. 143 Volume I, Section 705.1.1, pg. 157 Volume IX, Section 409.2, pg. 18	IBC Table 704.8 provides a middle ground.
2.4	When you have restricted open space use, and cannot have a building there in the future, you should have an exemption for fire separation (for Ø Lot Line) (Doug Boone)	TND	Fire Separation	Volume I, Table 600, pg. 143 Volume I, Section 705.1.1, pg. 157 Volume I, Section 202, pg. 21 Volume I, Section 503.3, pg. 129	There currently is an exception: a) if the property complies with public way definition, or b) we will accept a no-build easement with a no-build line.
3.1	Stair riser/tread measurements. The steeper the stair is allowed to be, the less square footage it takes, the less expensive the house can be. (Dawn Blobaum)	AH	Egress	Volume I, Section 1007.3.1, pg. 262 Volume I, Section 1007.8, pg. 264 Volume VII, Section 314.2, pg. 20	The subcommittee feels IRC/IBC dimensions are appropriate. See separate summary discussion.
3.2	Use fire escape or ladders to provide second means of emergency egress (Tom Goodwin Appendix Item)	AH	Egress	Volume I, Section 1011.1, pg. 267	The code allows on existing buildings. On new construction, the subcommittee saw no benefit relative to the greater risk.
3.3	Reduce window areas where possible (Tom Goodwin Appendix Item)	AH	Egress	Volume VII, Section 303.1, pg. 9 Volume VII, Section 310.2, pg. 19	No one felt the minimum code requirements were excessive.

Meeting #	Issue	AH or TND	Category	Code Section	Current Status
3.4	Commercial buildings: 2-3 story building with existing problems, consumption of floor plate by elevators and stairs, any alternative exiting strategies. (John Burgess)	TND	Egress	Volume I, Section 1014.1.2, pg. 273 Volume I, Section 1020.1, pg. 289 Volume I, Section 1025.1, pg. 296.1 Volume I, Section 1026.1, pg. 296.2 Volume IC, Chapter 15, pg. 245	The subcommittee needs an example in order to pursue this request.
3.5	Can the minimum number of windows in each façade be reduced? (Dawn Blobaum)	AH	Egress	Volume VII, Section 303.1, pg. 9 (or local ordinance) Volume VII, Section 310.2, pg. 19	No one felt the minimum code requirements were excessive.
3.6	The IRC stair section of the code has increased the tread depth and decreased the riser height of stairs. This means more square footage required for stairs and that current stock plans do not comply with the Code. IRC-NC is still reviewing this section and is leaning towards bringing forward our current requirements. We have data indicating that other states have not adopted the IRC provision and that some of the data submitted to the IRC is suspect. (Tom Goodwin)	AH	Egress	Volume VII, Section 314.2, pg. 20 Volume I, Section 1007.3.2, pg. 262 Volume I, Section 1007.8, pg. 264 IRC 314	The subcommittee feels IRC/IBC dimensions are appropriate. See separate summary discussion.
3.7	Chapter 32, Section 3203, "Doors and Windows": "Doors shall not open or project upon public property. Exit doors, as specified in Chapter 10, which are required to pen in the direction of exit travel, shall be set back from the property line by means of vestibules or similar enclosures." An important feature of TND's are the commercial buildings set up to the sidewalk – right on the property line. This section really limits the design of the storefronts for those. (Dawn Blobaum)	TND	Egress	Volume I, Section 3203, pg. 663 Volume I, Section 1012.1.2, pg. 268	The code currently allows in-swing doors for occupant loads of 49 or less.
4.1	Buildings should accommodate change in use, over time, without expensive upfitting. (Ann Hammond)	TND	Use	Volume IX, Section 104.5, pg. 2	This is an issue of change in hazard or particular use change with particular code requirements. Different uses have different health and safety needs. When change in use occurs, must add in code required components that are missing.
4.2	Street arcades should be allowed over the sidewalk if the sidewalk remains handicapped accessible. (Ann Hammond)	TND	Use	Volume I, Section 3206, pg. 664	Needs further research.
4.3	Something that suggests you look at code, not from code/structure, but from hazard increase from use. Example: TND's assume land use will change over time, so move away from compartment approach to the code. (Doug Boone)	TND	Use	Volume IX, Section 501, pg. 23	The code allows this through the hazard groups. It is the increase in hazard which limits your flexibility.
6.1	Accessibility: UFAS: buildings with four or more units, NC: projects with four or more units, four-plex unit without requirements all ground units accessible	AH	Accessibility	Volume IC, Section 30.1.1, pg. 421	Advance this as a code change aligning Volume I-C with the Fair Housing Act.

Meeting #	Issue	AH or TND	Category	Code Section	Current Status
6.2	Accessibility – if entire building is labeled commercial, then requirement extends to whole building. (Demetri Baches)	TND	Accessibility	Volume 1C, Section 1.2, pg. 1	If the residential live-work criteria (03/06/2000) is used, accessibility is only required in the work area. Otherwise the NCSBC commercial building regulations align with the Fair Housing Act.
6.3	The code shouldn't have anything that says X% maximum work square footage in live-work buildings; it is unenforceable over time. (Ann Hammond)	TND	Accessibility	Conceptual issues	Need to submit a change for the March 6, 2000 live-work code requirements. Staff needs to meet to confirm criteria.
7.1	Distance from grade to bottom of siding is currently required to be 12". Reducing that to 8" will save $800 to $1000 per home. (Frank Jacobus)	AH	Structural	Volume VII, Section 322.1, Item 5 Volume I, Section 2304.2.5, pg. 554.2	6" is the minimum requirement to the bottom of non-decay resistant siding per Volume VII, Section 322.1 and the IRC.
7.2	Are there more areas where 2 x 4's at 24" can be used rather than 2 x 4's at 16". (Dawn Blobaum)	AH	Structural	Volume I, Section 2308.1(a), pg. 563 Volume VII, Section 602.3(d), pg. 76	In IRC and Volume VII, this is currently allowed in load bearing, single story or top floor of second story and non-load bearing walls. Other locations would have to be proposed under an engineered designed criteria; minimum finish support requirements still apply.
7.3	There are revised seismic provisions all through the IRC. These are to be discussed in the Ad-hoc Committee's August meeting. The current seismic maps in the IRC puts portions of western North Carolina in a higher seismic zone. Shear walls, additional seismic reinforcing, and connections will be required. (Tom Goodwin)	AH	Structural	Volume I, Section 2308.1.5, pg. 571 Volume VII, Section 301.2(a), pg. 9 IRC 301	Still under consideration by Building Code Council, but does not apply to Mecklenburg County.
7.4	The Wind Speed Maps have had significant revisions. The IRC has changed from a fastest mile measurement to a 3-second gust measurement. More counties in the coastal areas will require increased hurricane tie downs and this will include impoverished areas. (Tom Goodwin)	AH	Structural	Volume I, Section 1606, pg. 378 Volume VII, Section 301.2(b), pg. 9	Still under consideration by Building Code Council, but does not apply to Mecklenburg County.
7.5	Use footer blocks instead of poured footings (Tom Goodwin Appendix Item)	AH	Structural	Volume VII, Section 403.1, pg. 28	Allowed now by Mecklenburg County with an engineer's letter.
7.6	Use 1-inch band joist rather than 2-inch (Tom Goodwin Appendix Item)	AH	Structural	Volume VII, Section 502.5, pg. 41	Currently allowed by Volume VII and IRC with limitations to prevent rotation.
7.7	Use 2 x 3 partition wall studs instead of 2 x 4's, if bearing (Tom Goodwin Appendix Item)	AH	Structural	Volume VII, Section 602.3(d), pg. 76	For non-bearing walls, this is allowed in IRC and Volume VII for wood frame construction. Other systems not prescribed accepted under alternate methods.
7.8	Use plywood box headers (Tom Goodwin Appendix Item)	AH	Structural	Volume VII, Section 602.6, pg. 77 Volume VII, Section 602.6.2, pg. 77	Allowed in Volume VII and IRC.
7.9	Eliminate band joist (Tom Goodwin Appendix Item)	AH	Structural	Volume VII, Section 502.5, pg. 41	Currently allowed by Volume VII and IRC with limitations to prevent rotation.
7.10	Use 1 x bottom plates for inline framed exterior walls (Tom Goodwin Appendix Item)	AH	Structural	Volume VII, Section 602.1, pg. 73	This proposal results in an inferior product.
7.11	Use 1 x top and bottom partition plates (Tom Goodwin Appendix Item)	AH	Structural	Volume VII, Section 602.1, pg. 73	This proposal results in an inferior product.

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Meeting #	Issue	AH or TND	Category	Code Section	Current Status
8.1	Allow smaller number of electrical outlets for existing buildings than for new buildings (minimum 2 per room; 3 in kitchen) (Tom Goodwin Appendix Item)	AH	MEP	Electrical code – Gerald	The existing NEC criteria seems appropriate, to decrease this would create a safety issue.
8.2	Reduce pipe size (Tom Goodwin Appendix Item)	AH	MEP	Plumbing code – Phil (call Tom)	Further information to collect.
8.3	Electrical service ground treated as commercial, top as residential. (Demetri Baches)	TND	MEP	Electrical code – Gerald	NEC differentiates between construction type, building height and service load, not residential vs. commercial.
8.4	Townhomes should be able to gang meters vs. individual. (Marc Houle)	TND	MEP	Electrical code-Gerald	Code does not preclude this assuming easements and appropriate ownership structure.
8.5	Coordination between DOI and local authority. (Peter Pappas)	TND	Administration	Administrative	Engineering & Building Standards honors all written DOI interpretations. DOE opinions are subject to Engineering & Building Standards concurrence.
8.6	Sales office trailers should be less punitive. (Ray Holt)	AH	Administrative	Administrative	Need clarification from sponsor.

Part III:
Local Ordinances and Issues - Analysis & Recommendations

The topics included in local ordinance and other issues cover a wide spectrum, ranging from the most appropriate street and alley widths to the structure of permit fees. A summary of local issues and the Task Force recommendations or comments on each is included in the following pages.

To review the 43 issues raised, the Task Force held six (6) meetings, inviting issue sponsors, interested parties and other Task Force members to participate selectively as the topics dictated. The result was a group of recommendations, generally including the following large categories.

1. **Alley widths and ownership:** The City and Towns should adopt alley standards and alleys should be publicly owned.
2. **Construction office permits:** Should be waived if included with the building permit data.
3. **Alley classification:** The City and Towns should seek State legislation classifying alleys as streets.
4. **Cost benefit analysis:** The City, County and Towns need to adopt a cost benefit analysis procedure for all local ordinances or regulations impacting housing.
5. **Publicly held land:** Land held by the City, County and towns should be inventoried and made available for low cost housing at a reduced rate long term lease.
6. **Fire equipment circulation:** Fire Department equipment circulation plans should be proposed at project initiation. The City and Towns should agree with their Fire Departments on what minimum criteria should apply to these plans. Approved plans should be adhered to strictly as a project develops.

In addition, a number of comments and recommendations were made regarding smaller scale development details. Please refer to Items 9.8 through 9.28 for brief comments on each issue.

The Department proposes advancing Item #2 this Spring. It is the responsibility of the City and Town governments to advance the remaining issues.

Meeting #	Issues	AH or TND	Comments
6.1	Access not necessarily off public thoroughfare. (Marc Houle)	TND	Alleys should be publicly accepted and maintained. All utilities should be run through the alley.
6.2	How you treat design of alley thoroughfare grade vs. driveway. (Demetri Baches)	TND	No clarification provided. No recommendation.
6.3	Issue of no standard for publicly maintained alley. (Marc Houle)	TND	Town and City should adopt alley standards. Suggest 20' right of way, 13' paved width, section of 6" + 1 ½" with inverted crown.
6.4	Construction offices require zoning permits. (Jim Bartl)	AH	Recommend zoning permit requirement be waived if construction trailer is located on permit site plan and placed in that location. Note: E&BS currently working on streamlined sales office trailer permitting process.
6.5	Some of the TND Ordinances require alleys for all lots 60 feet wide and under. Further, the alleys usually are not accepted for maintenance by the towns. This can put a burden on affordable housing developments. In addition, NCDOT will also not accept alleys tying into state roads, will not accept the alleys for maintenance, and has state standards for alley construction. (Tom Goodwin)	AH	Towns should seek legislation to revise the "Powell Bill" to include alleys as a classification of street. Two options on affordability issue: a) omit alley requirement at affordable housing areas, b) have town/city maintain alleys and underwrite construction cost.

7.1	The alleys in most ordinances are within a 20 feet wide easement and have between 10 to 12 feet of pavement. The alleys provide access to parking and garages and are also used for trash service. The 10-foot alleys are difficult for the trash trucks to negotiate and because of this require more maintenance. There are no provisions for minimum turning radii for internal turns and little guidance on how to connect the alleys to the street system. The fire departments I have spoken to can not use the alleys. For the safety of the pedestrian some consideration to having the sidewalk continue across the alley should be given. (Tom Goodwin)	TND	• Plan on fire department 20' clear access through major streets in development. Must develop a circulation fire department access plan and must be adhered to and include analysis of parking.
			• Within this plan, should meet on exceed specific minimums:
			  • 12' Alleys
			  • Curb detail where alley joins street (Charlotte-Mecklenburg Land Development Standards: Commercial Drop Curb Type II Driveway with Planting Strip (2'-6" Curb and Gutter) Std. No. 10.25B)
			  • Use of clearance triangle at all intersections
			  • Commercial access as follows:
			  • Minimum 20' on one side of multi-family structures (county)
			  • Minimum 20' on two sides of commercial buildings (city)
			• Need to designate "no parking" areas on streets where fire department requires access
			• Locate hydrants on corners

Meeting #	Issues	AH or TND	Comments
7.2	NCDOT's TND Guidelines and many of the Ordinances permit between 10 to 15 feet radii on intersection corners. When combined with narrower road widths and on-street parking access by emergency vehicles can be restricted. (Tom Goodwin)	TND	See 7.1 above
7.3	Fire access to commercial and multi-family structures. (Michael Fox, Bart Massey)	TND	See 7.1 above
7.4	City has concerns about circulation of fire equipment. (Bart Massey)	TND	See 7.1 above
8.1	Cost benefit analysis on local regulations or ordinances. (Jon Gauthier)	AH	• To the best of our knowledge, no city or town or the county has a policy on requiring cost benefit analysis regarding affordable housing. This could be advanced as a policy issue, which would be worthy of discussion by elected officials and subject to debate • It appears that only Davidson has any requirement regarding affordable housing.
8.2	NCSB cost analysis should account for disproportionate impact. (Jon Gauthier)	AH	The Building Development Fee Ordinance currently does this.
8.3	Address fees (do a comparison) $60,000 residential and inspection cost. (Greg Austin)	AH	Addressed this issue in Meeting #3, see Appendix.
8.4	Cost of land. (Greg Austin)	AH	Proposes identifying all publicly held land (city, county, towns) through comprehensive search/inventory. Assemble and make available for low (and perhaps moderate) cost housing with a 50-year lease at $1.00/year.
8.5	Targets for proportional fee destructuralization – planning commission, CMUD, erosion control, subdivision review, and engineering plan review. (Jon Gauthier)	AH	Building fees are graduated; however, utility fees are not.
9.1	Use common lateral water pipes (Tom Goodwin Appendix Item) **CMUD**	AH	***This would require amending City ordinances to allow easements and privately owned water works.*** CMUD doesn't think this is a good idea because: • Could get into utility commission required tests • Pushes collecting maintenance issues down the road. Where done in 70's, now those developments are seeking city acceptance because of utility upgrade costs.

Meeting #	Issues	AH or TND	Comments
9.2	Use common lateral sewer pipes (Tom Goodwin Appendix Item) **CMUD**	AH	***This would require amending City ordinances to allow easements and privately owned water works.*** CMUD doesn't think this is a good idea because: • Could get into utility commission required tests • Pushes collecting maintenance issues down the road. Where done in 70's, now those developments are seeking city acceptance because of utility upgrade costs.
9.3	Use sand mound septic systems (Tom Goodwin Appendix Item) **Health**	AH	Allowing such methods on systems would require changes at the state level, a lengthy bureaucratic process which would have little chance of approval. In reality, Environmental Health believes these systems would rarely be used in Mecklenburg County on affordable housing projects, because they are expensive on a per unit basis.
9.4	Use evaporation and absorption beds (Tom Goodwin Appendix Item) **Health**	AH	See 9.3 above.
9.5	Use small diameter gravity sewers with individual septic tanks (Tom Goodwin Appendix Item) **Health**	AH	See 9.3 above.
9.6	Use septic tank effluent pump system (pressure system) (Tom Goodwin Appendix Item) **Health**	AH	See 9.3 above.
9.7	Use recirculating sand filter septic system (Tom Goodwin Appendix Item) **Health**	AH	See 9.3 above.
9.8	Cluster homes in higher density without changing overall density (Tom Goodwin Appendix Item) **Planning**	AH	Has documented benefit, but has some downsides, such as storm water detention problems.
9.9	Reduce house setbacks, frontage, floor/area ratio (Tom Goodwin Appendix Item) **Planning**	AH	Has documented benefit, but has some downsides, such as storm water detention problems.
9.10	Reduce lot size (Tom Goodwin Appendix Item) **Planning**	AH	Has documented benefit, but has some downsides, such as storm water detention problems.
9.11	Include variety of housing types (Tom Goodwin Appendix Item) **Planning**	AH	Has documented benefit, but has some downsides, such as storm water detention problems.
9.12	Take advantage of nontraditional zoning to increase density (Tom Goodwin Appendix Item) **Planning**	AH	Has documented benefit, but has some downsides, such as storm water detention problems.
9.13	Reduce (one side only) or eliminate sidewalks (Tom Goodwin Appendix Item) **Planning**	AH	At most, limit to one side; don't eliminate.
9.14	Reduce width of sidewalks to 3 feet maximum (Tom Goodwin Appendix Item) **ADA/Planning**	AH	Cost savings doesn't appear to be commensurate with loss of use.
9.15	Limit right-of-way widths to minimum needed for street and maintenance (Tom Goodwin Appendix Item) **DOT**	AH	***See 7.1 above***

Meeting #	Issues	AH or TND	Comments
9.16	Reduce size of curb and gutter(Tom Goodwin Appendix Item) **Planning**	AH	• The most common type of curb and gutter required on residential streets is 2'-0" valley curb. The valley curb works well and is economical for roads with many driveways since the curb is mountable and driveways can be poured up to the back of the curb. Standard curb and gutter is usually required where there are few or no driveways. The sections of standard curb in front of driveways must be removed and replaced with a ramp. The standard curb and gutter works well to restrain vehicles that are parked on the street to the roadway so adjacent grass strips are not damaged. • When standard curb and gutter is specified, Charlotte-Mecklenburg commonly requires that it be 2'-6". Using the narrower 1'-6" curb & gutter would save about $2 per linear foot in cost. Berry Miller, Construction Supervisor for City of Charlotte Land Development Services, opposes the use of 1'-6" curb & gutter. Berry's concern is that the narrower width reduces the stability of the curb making it susceptible to rotating back if struck by tires. The City does however allow 2'-0" standard curb & gutter in Traditional Neighborhood Development and 1'-6" standard curb & gutter is allowed and is very common around planted medians. • ***Huntersville, Davidson, and perhaps Cornelius allow 1'-6" curb and gutter on residential streets.*** • 1'-6" curb and gutter is also specified on the Charlotte-Mecklenburg standard for private streets.
9.17	Place sidewalks and utilities in easements rather than in right-of-way (Tom Goodwin Appendix Item) **Planning**	AH	May save costs if this means pulling house up to street and reducing lot depth.
9.18	Reduce radius of bulb cul-de-sacs; use T-, hammerhead-, or island-turnabouts (Tom Goodwin Appendix Item) **DOT/Planning**	AH	***See 7.1 above***
9.19	Use swales rather than curbs and gutters (Tom Goodwin Appendix Item) **Planning**	AH	***Allowed in Huntersville, for example, only as a rural condition. Has construction cost downside.***
9.20	Reduce street widths according to function (Tom Goodwin Appendix Item) **DOT/Planning**	AH	Towns currently have flexibility on this.
9.21	Use common driveways or parking areas (Tom Goodwin Appendix Item) **Planning**	AH	Huntersville encourages this. Makes sense, especially in watershed area.
9.22	Use rolled or mountable curbs instead of vertical curbs (Tom Goodwin Appendix Item) **DOT/Planning**	AH	Rolled and mountable are currently allowed with the exception of lots that are alley accessed in some towns.

Meeting #	Issues	AH or TND	Comments
9.23	Use integral curbs (combined sidewalks and curbs) (Tom Goodwin Appendix Item) **Planning**	AH	Currently allowed.
9.24	Use an alley to provide parking or driveway on narrow lots (Tom Goodwin Appendix Item) **Planning**	AH	Don't understand proposed change.
9.25	Use gravel or asphalt walkways instead of concrete (Tom Goodwin Appendix Item) **Planning**	AH	Undesirable. Long term downside on maintenance cost. Also impacts watershed area.
9.26	Reduce thickness of concrete walks to 2 ½ inches (Tom Goodwin Appendix Item) **Land Development**	AH	May have short-term payback, but long term downside would be significant. Could lead to long term capital costs for towns.
9.27	Use paths instead of street sidewalks (Tom Goodwin Appendix Item) **Planning**	AH	See 9.25 above, but also has a negative safety issue..
9.28	Inspection fees and use of multi-trade inspectors. (Bert Green)	AH	• On multi-trade inspectors, the department is moving toward a limit of 400-600 S.F. maximum project size on multi-trade residential. • Permit fees – this is counter the county's policy and state constitution of having a uniform fee structure related to the real cost. It is also counter to the BOCC challenge for code enforcement to be fully fee-funded.
9.29	Capacity fee exception for multi-family/single-family to sprinkler. (Ben Aycock)	AH	CMUD currently charges lower capacity fees for fire lines than for domestic: • 47.5% less on 4" line • 33.33% less on 6" line
9.30	Eliminate inspections. (Greg Austin)	AH	A review yielded no unnecessary inspections.

Appendix Index

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ATTENDANCE SUMMARY

Name	Interest	Jul 31	Aug 16	Aug 30	Sep 14	Oct 05	Oct 19	Oct 26	Nov 02	Nov 09	Nov 16	Nov 30	Dec 07	Dec 14	Jan 04	Jan 18	Feb 07	Feb 21	Mar 07	Mar 21	Apr 11	Apr 25	May 09
Austin, Greg	BDC		X								X												
Aycock, Ben	BDC	X	X	X	X									X	X	X	X	X		X	X		X
Baches, Demetri	Duany Plater		X																X				
Barley, David	Town of Pineville																			X			
Bartl, Jim	E&BS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Beard, Donnie	Co. Fire			X	X												X				X	X	
Blobaum, Dawn	Town of Davidson	X														X							
Bolick, Matt	Town of Cornelius																				X		
Boone, Doug	Boone Communities			X	X	X									X	X	X				X		
Boyd, Harvey	Crestdale Community		X	X				X	X											X			
Brown, Katrina	E&BS	X	X	X	X		X		X	X		X			X								
Brown,Tim	Town of Cornelius																						
Burgess, John	Burgess Design		X																				
Edwards, Phil	E&BS												X							X			
Fox, Michael	Co. Fire		X														X						
Gauthier, Jon	Fannie Mae		X																X				
Goodwin, Tom	Shook Design	X			X					X		X	X				X				X		
Green, Bert	Habitat		X																				
Hall, Dennis	Hall Architects								X	X		X		X									
Hall, Rickey	DSS						X	X	X	X	X	X			X								
Hammond, Ann	Town of Huntersville	X		X	X																		
Hannon, Jon	CFD																X						
Harrison, David	Shook Design		X																				
Harvell, Gerald	E&BS												X										
Holt, Ray	Colony Homes		X																				
Horton, Willis	E&BS																						
Houle, Marc	Yarborough Assoc.	X	X		X											X							
Huntley, Cleveland	CFD						X										X						
Lanning, Kari	E&BS	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X		X	X	X
Layman, Roger	Little & Assoc.		X																				
Low, Thomas	Duany Plater																				X		
Luster, Ray	Centralina		X																				
Mann, Elliott	Ryland	X		X																			

Task Force on Regulations in Residential Construction
Final Report to the Building Development Commission

Name	Interest	Jul 31	Aug 16	Aug 30	Sep 14	Oct 05	Oct 19	Oct 26	Nov 02	Nov 09	Nov 16	Nov 30	Dec 07	Dec 14	Jan 04	Jan 18	Feb 07	Feb 21	Mar 07	Mar 21	Apr 11	Apr 25	May 09
Massey, Bart	City Fire		X		X												X		X	X	X	X	
McCrory, Tom	DPR	X		X																			
McSwain, Lon	E&BS					X	X	X		X	X	X	X	X								X	
Morton, Gene	E&BS		X	X	X	X	X	X	X	X		X	X	X	X	X	X		X			X	
Mullen, Stuart	Town of Huntersville															X						X	
Nathan, Monica	Community Link							X															
O'Brien, Michael	Neighboring Concepts			X				X		X	X			X								X	
Rhodes, Jay	Neighboring Concepts						X		X	X		X	X	X	X								
Rudisill, Jeff	E&BS						X	X		X		X											
Russum, Brunson	The Lawrence Group					X		X															
Tatge, Peter	E&BS										X												
Taylor, Tim	E&BS										X					X			X	X	X	X	X
Whittlesey, Kia	E&BS																				X		

MECKLENBURG COUNTY
Engineering & Building Standards Department

Memo

Date: December 7, 2000
(changes from 12/14 meeting in italics)
To: Members of the TFRRC subcommittee on code changes
From: Jim Bartl
RE: Proposed Live-Work Criteria
CC: Kari Lanning

This memo shall serve as the report of Gene Morton, Lon McSwain and myself on the study performed evaluating suggested changes and questions regarding the 3/6/2000 Live-Work Criteria.

We focused on 4 issues, and our conclusions on each are as follows.

1) **Is the proposed Live-Work Criteria enforceable, especially the 50%(-) limitation of work area?**
   We found several examples in local zoning ordinances of customary home occupation regulations referencing a limit of 25%. In addition, other code limitations, such as total occupancy limits, assume compliance subject to notification otherwise, followed by penalty action. The Live-Work 50%(-) limit would seem to be in the same range of enforceability.

2) **Is the 3000 sq. ft unit / 3 story height limit appropriate?**
   Both Day Care (419.3.1) and "B" use non-rated separations (704.3.1), reference 3,000 sq. ft. limits. The 3 story limit seems to be appropriate given the scale of projects typically using Live-Work units.

3) **Should the 50% limit on the work area be *higher*?**
   Given the desired use of the Residential Code, rather than the building code (NC Vol. I), as the prevailing criteria, it would seem appropriate to have the residential area as the majority use in the unit. Larger percentages of work area could be achieved by switching to the commercial code (NC Vol. I).

4) **5 person non-resident limit**
   This limit was originally lifted from Day Care limits(419.3). All agreed this should be revised to limit non-residents to 5 worker/employees, with no reference to resident or customer occupant limits.

While the Task Force comments called for Live-Work Criteria to be more generous, all of us feel this direction would lead ultimately to a failed code change recognizing the peculiarities of Live-Work units. Specifically, it was noted a set of Live-Work Criteria which is well defined, unique, small and fairly

restrictive could survive the code change process. The process will attempt to show that many of the exceptions already exist in the code, so there is no need for a special "Live-Work" category. The narrower and more precise the Live-Work Criteria is defined, the greater its chances of success.

The result of the above study is that, with the exception of the minor change noted in #3, all other Live-Work Criteria will remain as outlined in the E&BS 3/6/2000 memo.

The code change we anticipate, would look something like the following.

Proposal to Amend the International Building Code
In Section 310.1 Residential Group "R", add the following classification.

R-5 Live-Work Units: residential occupancies where the occupants are primarily permanent in nature and not classified as R-1, R-2 or I and where there is not more than one dwelling unit in a building, to include a townhouse.

Group R-5 occupancies shall meet the following requirements:
a) Construction shall meet requirements of the International Residential Code, and the following.
b) Non residential use areas shall meet accessibility requirements of Chapter 11 of this code (including site access and parking).
c) Work area use must be located on first or main floor only.
d) Work area must meet the applicable commercial requirements of the building code including building, electrical, mechanical, and plumbing.
e) Maximum total size of Live-Work unit is 3000 square feet and three stories in height.
f) Work area must occupy less than 50% of total unit.
g) Same tenant must occupy work area and living area.
h) Maximum of five non-resident worker/employees allowed in the Live-Work unit at one time.
i) Smoke detectors, per *NFPA 72*, must be installed in all unoccupied spaces such as attics, basements, *work area* storage spaces etc.
j) Walls and ceiling finishes must be non-combustible.
k) Each room of the work area must have access to two remotely located exits or have a direct exit to the outside, *one of which is accessible*.
l) Must have a manual fire alarm, *consisting of (……..description to be inserted by Jim Bartl)*
m) Stairs when enclosed or separated at the top or bottom must be one-hour construction.

Group R-5 work function *use shall be limited to business or mercantile, including, but limited to the following*:
- Artists studios
- Barber or beautician facilities
- Business offices
- Coffee shops
- Markets
- Physicians offices
- Professional offices
- Sale of goods or merchandise
- Workshops such as metal shops or wood shops

Other work functions may be accepted by the Authority Having Jurisdiction, if the work hazard is shown to be comparable to the work functions listed above.

Ben B. Aycock P.E.
Building/Fire Code Consultant

January 2, 2001

To: Members of the TFRRC sub-committee on Code Changes
From: Ben Aycock
Re: Proposed Live-work Criteria
CC: Kari Lanning

This is in further reference to Mr. Bartl's memo dated Dec 7, 2000 concerning the proposed code changes to accommodate small live-work units. At the last meeting of this subcommittee, Mr. Bartl requested that I do some research on the subject of smoke detectors and manual alarms as mentioned in items "I" and "1" of your memo.

I have had a discussion with Mr. Jim Roberts, Chair of the NFPA Technical Committee on Initiating Devices for Fire Alarm Systems, (Responsible for Chapter 2 of NFPA 72) and he has given some valuable information on the subject.

First, smoke detectors on the market today are not at all reliable at ambient temperatures above 100 F and since this temperature would be exceeded, it would not be practical to use these devices in attics. Mr. Roberts points out that NFPA 72 does not require smoke detectors in the attic of a dwelling, but recommends fixed temperature heat detectors in these areas. (NFPA 72, Sec. A 8-1.2.4). Most manufacturers produce heat detectors rated at 135 F and also a variety of ratings ranging from 190 F up to 215 F Mr. Roberts advised that the 135 rating would invite false alarms in uninsulated attics and recommends the higher rating.

At the present time there is no self-contained smoke detector on the market capable of manual operation, thus Item 7 of the memo would have to be a separate system and could not utilize the sounding device portion of the smoke detectors.

To offer a solution to the problem, Jim did advise that a small alarm panel having four zones would cost around $400 and should satisfy the need for this type installation. The four zones could represent the three floors and the attic with smoke detectors on occupied floors and heat detectors in the attic. A manual box can be included on any or 0 floors and audible and visual alarm annunciating devices (horn-strobes) may be installed as needed. This small system would be powered from the panel with battery aux. power, and could be arranged to transmit to a monitoring station if desired.

In passing, Mr. Roberts suggested that metal and wood shops be eliminated due to the usual hazards of combustible and flammable finishing materials.

We can discuss further at the next meeting.

August 30, 2000

Permit Fee vs. Inspection Costs

Permit Fees
Example: New residence – 1200 sq. ft. heated w/144 sq. ft. deck

Building	$45,000
Electrical	$5,000
Mechanical	$5,000
Plumbing	$5,000
Total Project Cost:	$60,000

Permit Fee **$522.66**

Inspection Costs

Building Inspections:	Footing	
	Foundation/Slab	
	Framing	
	Insulation	
	Final	
	5 inspections + 39% failures = 6.95	
Electrical Inspections:	Saw Service	
	Rough (electrical)	
	Final (electrical)	
	3 inspections + 34% failures = 4.02	
Mechanical Inspections:	Rough and Gas Piping	
	Final (includes gas test)	
	2 inspections + 25% failures = 2.56	
Plumbing Inspections:	Slab Homes	Crawl Homes
	Slab/sewer/water	Rough
	Rough	Water Distribution
	Water Distribution	Sewer Water
	Final	Final
	4 trips + 20% failures = 4.80	

Total # of Inspections: 18.33

- Cost per inspection varies ($50 to well over $90) relative to size and complexity of job.
- For small residential – use $50 for average

Average # of Inspections for small residence:	18.33
Cost/inspection for small residence:	x $50.00
Total Inspection Cost	**$916.50**

Fee Adjustment for Failed Inspection
18.33 inspections includes 4.33 failures = 24% fail rate
Adjusted fee + 10% or $522.66 + 10% = $574.93

Fee of $574.93 vs. Cost of $916.50

October 26, 2000

Stair Tread Discussion

1. Summary of Current NCSBC & IBC/IRC Requirements

		Rise	Run	Note
IBC	(commercial)	7"	11"	D4 exception 7 ¾" / 10
IRC	(residential)	7 ¾"	10"	
Vol. I	(commercial)	8 ¼"	9" w/min 1" nosing	
Vol. VII	(residential)	7 ¾"	9"	If no ramp or elevator serving floor, must be 7/11

2. Open Discussion

Lon – In ad hoc residential committee, the 7 ¾" requirement was debated at great length versus 8 ¼" current but in the end decided to leave in because (in part) of elderly concerns.

Jeff – cost of floor area – steepness creates safety hazards, two issues, most accidents occur at transitional areas in home. He cringes at steepness beyond IBC.

Lon – arguments in ad hoc committee agree that steeper stairs are hazardous.

Gene – large cities have much less room for ranch style homes.

Brunson – personally, they are able to work around the additional linear foot, personally has experienced safety issue.

Katrina – most affordable houses have 8' ceiling.

Brunson – using 9' in Davidson.

Lon – meeting claimed we don't have the standard so parts are hard to find.

Jim – standardization is important to E&BS.

Jeff – routine to have problems with stairs because even the bigger houses are trying to compress the stairs. In large houses, not an issue of adding space, it's wanting to use it for something else.

Brunson – gets more bang for buck out of reducing circulation - change circulation space helps with the cost of the house, using open floor plans.

Subcommittee worked through quick calculation of added total run caused by IRC/IBC reduced riser:

NCSBC	IRC/IBC Proposed	Difference
96”/8 ¼” = 11.6 or 12	96”/7 ¾” = 12.38 or 13	difference of 1
108”/8 ¼” = 13.09 or 14	108”/7 ¾” = 13.9 or 14	no difference

Brunson – does see the problem; safety issue far outweighs the 10” gain.

Gene – see some creativity because the end of the stair may impact the size of the corridor. There are lots of standard plans available.

Jeff – builders claim the size of the house is driven up.

Gene – not just adding 10” to stair, argument is that it adds 10” to house. Effects stair 1 to side of house.

Mr. Boyd – critical; doesn’t want to fall down stairs, safety should be the deciding factor

Katrina – agree that stairs should not be any less.

Monica – safety first.

3. Conclusion
Subcommittee inclined to accept as proposed in IBC/IRC. Will discuss one last time in future meeting.

MECKLENBURG COUNTY
Engineering & Building Standards Department

Memo

Date: **November 15, 2000**
To: **Barry Gardner, NC Building Code Council Chairman**
From: **Jim Bartl, Director of Code Enforcement**
CC: **Wanda Edwards, Tom Turner, Bobbie Shields**
RE: **Request for Presence on the December 12 BCC Agenda**

As discussed in our telephone call yesterday, Mecklenburg County Engineering & Building Standards Department (E&BS) requests the opportunity to make a presentation to the Building Code Council at the December 12 meeting. The purpose of the presentation is to propose a pilot program for existing buildings, based on use of the Maryland/New Jersey Rehab Codes. At the request of a local Task Force and several professionals, we've been studying this rehab code model for the last 3 months. We believe it has merits as an option for customers; something they can use on existing buildings besides NC Volume IX.The only way to thoroughly test the value is with a pilot; hence the proposal.

1. Background
The Maryland and New Jersey Rehab Codes are very similar. They both provide a framework wherein code requirements gradually increase, as a project's scope of work increases. This code is said to be friendlier to small rehab projects, encouraging rather than discouraging the upgrading of building. It is also credited with support of affordable housing. It appears to be more flexible on historic buildings. The track record of the New Jersey Rehab Code is as follows:

- Adopted in 1997, New Jersey has 3 years of experience working with this tool.
- The New Jersey Rehab code has significantly stimulated an increase in rehab, specifically: up 40% in Trenton (30m), up 60% in Newark (109m), up 80% in Jersey City (90m).
- The New Jersey Rehab code is credited with lowering the cost of residential rehab by 20%.

2. Mecklenburg County study of the Maryland Code
At the request of the local Task Force on Regulations in Residential Construction, we began studying the Maryland Code in August. The New Jersey and Maryland Rehab Codes are very similar, however, the Maryland Rehab Code is part of the Governor's Smart Growth initiative and has a substantial web site supporting it, so we elected to review it in detail. **I have attached a copy of both the Notes from our study and the Draft Maryland Rehab Code for your reference**. In brief, some of the things we noted are as follows.

- The Maryland Code is broken into 6 categories of work
    a) Repair: patching and minor replacement.

b) Renovation: refinish and replacement, but no space reconfiguring.
c) Modification: reconfiguring space less than 50% of the area.
d) Reconstruction: reconfiguring space effecting exits or exit access.
e) Change of occupancy: change in use requiring change in application of the code
f) Addition: increase in building area.

- The Maryland Code gradually increases the code requirements as the previously noted scope of work increases. In doing so, the requirements are primarily prescriptive (flame spread, fixture counts, etc) although there are some performance statements ("may not make the building less conforming").
- The Maryland Rehab Code refers to other codes, including the Maryland Building Code and the Maryland Accessibility Code.
- The Maryland Code requires a preliminary code review with the AHJ. The AHJ is allowed to require a building evaluation by a licensed Architect or Engineer, and in the case of historic, this is required.

3. Proposed Pilot

Having studied the Maryland Rehab Code at great length over the last 3 months, we believe it is an effective option, which could benefit the community while still maintaining a high level of public safety. Since this code model has a demonstrated track record elsewhere, it would appear the best way to test this is through a 24 month pilot, structured as follows.

- E&BS would add 2 plan reviewers and 2 field inspectors specifically focused on working with this pilot and all NCSBC Volume IX projects.
- When the team is in place, we would offer the community a 24 month pilot in which they may use the Maryland Rehab Code as an option on existing buildings.
- E&BS would provide training, to both the assigned CEO's and the professional community on the use of the Rehab Code during the pilot.
- Where the Maryland Code references the Building Code or Accessibility Code, we would substitute the equivalent sections of the NCSBC Volume 1 or Volume 1-C.
- At the conclusion of the pilot, the assigned CEO's would prepare a report to the NC Building Code Council outlining in detail the differences between the pilot Rehab Code and Volume IX, highlighting perceived benefits accrued or safety shortfalls which were addressed along the way.

We believe there is great merit in pursuing a pilot based on the Maryland Rehab Code. However, we also note the alternate materials and methods provisions of the NCSBC do not apply here, as some Maryland Rehab Code provisions are clearly not equal to NCSBC Volume 1.Hence the purpose of our presentation, to request the Building Code Council allow Mecklenburg County Engineering & Building Standards Department to conduct a pilot to test the apparent benefits of the Maryland Rehab Code on existing buildings.

We appreciate your consideration on this issue. I am available to discuss our proposal in advance of the next BCC meeting as you feel appropriate.

CHARLOTTE – MECKLENBURG
LAND DEVELOPMENT
STANDARDS
COMMERCIAL DROP CURB TYPE II DRIVEWAY
WITH PLANTING STRIP
(2'–6" CURB AND GUTTER)
STD. NO. 10.25B
REV.
APPROVED DATE
PLAN VIEW
SECTION A–A
SECTION B–B
DRIVEWAY WIDTH VARIES
(SEE TABLE)
FRONT EDGE OF WALK
TOP OF CURB
GROOVE JOINT
GROOVE JOINT OR CONSTRUCTION JOINT
BEVEL CURB TO MEET DRIVEWAY PAVEMENT
PLANTING STRIP
1/2" EXP. JOINT
SEE NOTE 3
SIDEWALK
SLOPE 1/4"/FT.
4'-0" MIN.
4'-0"
6"
2"
4"
1-1/4"/FT. MAX
1/4"/FT.
4'-0" MIN
+25%
+16%
-2%
-6%
-14%
10'-0"
2'-6"
7"
DRIVEWAYS CLASSIFICATION
TYPE DRIVEWAYS | MINIMUM | MAXIMUM
ONE-WAY TYPE II – COMMERCIAL | 20' | 30'
TWO-WAY TYPE II – COMMERCIAL | 26' | 50'*
* NEED MORE THAN ONE CONTRACTION JOINT IN CENTER
NOTES:
1. ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH
2. AT ALL DRIVEWAYS, SIDEWALKS TO BE REMOVED TO THE NEAREST JOINT BEYOND NEW CONSTRUCTION OR CUT WITH A SAW AND REMOVED. SAW CUT OR JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING PAVEMENT. SEE ST. NO. 10.17 FOR JOINT DETAIL.
3. PAY LIMITS FOR WORK DONE UNDER CITY OF CHARLOTTE CONTRACTS ARE FROM EXPANSION JOINT TO EXPANSION JOINT AND BACK OF CURB TO BACK OF DRIVEWAY.
4. ALL DRIVEWAYS MUST MEET THE CURRENT CITY DRIVEWAY REGULATIONS AND NCDOT REQUIREMENTS FOR SPACING, SIGHT DISTANCE AND OFFSETS FROM PROPERTY LINES AND INTERSECTIONS.
REVISIONS
NO | DATE | DESCRIPTION
1 | 12/98 | NOTES 3 & 4
2 | 12/98 | NOTE * FOR DRIVEWAY CLASSIFICATION